

3.1-3.7 Review

Name _____ Date _____ Period _____

Part 1 – Calculators Allowed

Convert the angle given from degrees to radians. Leave as a multiple of π . Show work!

1. 48°

2. -126°

3. $24^\circ 36'$

Convert the angle given from radians to degrees. Round to the nearest tenth of a degree. Show work!

4. $\frac{13\pi}{6}$

5. $\frac{-5\pi}{2}$

6. 2.4

Find the length of the arc intercepted by the given central angle α in a circle with radius r . Round answers to the nearest hundredth. Show work!

7. $\alpha = 2.50$, $r = 18.15 \text{ cm}$

8. $\alpha = 115^\circ$, $r = 5.1 \text{ in}$

Find the area of a sector of a circle with the given central angle α and the given radius r of the circle. Round answers to the nearest hundredth. Show work!

9. $\alpha = 178^\circ$, $r = 10.2 \text{ ft}$

10. $\alpha = 3.2$, $r = 2 \text{ m}$

Find the measure of two angles, one positive and one negative, that are coterminal with the given angle.

11. 95°

12. -245°

13. $\frac{-5\pi}{6}$

14. $\frac{15\pi}{4}$

15. A wheel with a 16 inch diameter is turning at the rate of 75.4 radians per second. Find the linear velocity of the wheel in feet per minute. Round answer to nearest ft/min.

Find the exact values of $\sin \alpha$, $\cos \alpha$, $\tan \alpha$, $\csc \alpha$, $\sec \alpha$, and $\cot \alpha$ where α is an angle in standard position whose terminal side contains the given point. (Reduce and rationalize fractions if possible.)

16. $(-7, 5)$

17. $(4, -6)$

Evaluate each expression using a calculator. Give results in degrees to the nearest tenth.

18. $\cos^{-1}\left(\frac{1}{8}\right)$

19. $\sin^{-1}(.578)$

20. $\tan^{-1}(3.173)$

Use a calculator to find the acute angle α (to the nearest tenth of a degree) that satisfies each equation.

21. $\sin \alpha = 0.37$

22. $\cos \alpha = 0.965$

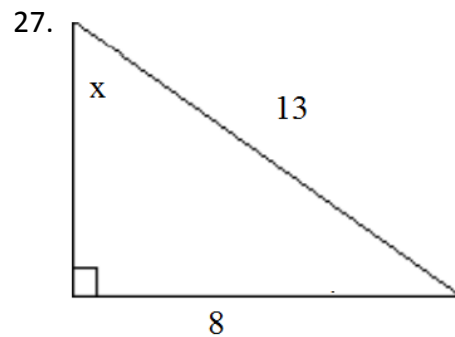
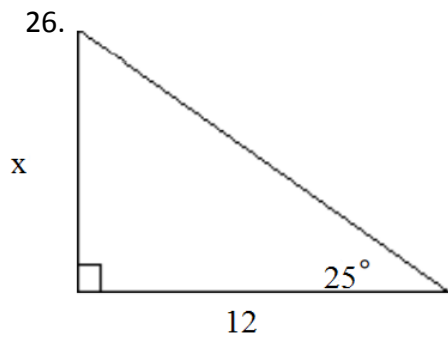
23. $\tan \alpha = 2.01$

Solve each triangle with the given sides and angles. In each case make a sketch. Round approximate answers to the nearest tenth.

24. $a = 13$, $c = 20$

25. $\beta = 26^\circ$, $c = 15$

Use a proper trigonometric ratio to solve for x. Round answers to the nearest tenth.



28. The angle of elevation from a boat on a lake to the top of a cliff is 18 degrees. If the line of sight to the top of the cliff is 184 feet, how far is the boat from the base of the cliff? Round answer to the nearest foot.

Part 2 – No Calculators Allowed

Find the exact value of the following expression without using a calculator. Some of the expressions may be undefined. Rationalize ratios if possible.

29. $\sin \pi$

30. $\cos \frac{\pi}{2}$

31. $\tan \frac{\pi}{3}$

32. $\csc \frac{\pi}{4}$

33. $\sec \frac{\pi}{6}$

34. $\cot \left(-\frac{\pi}{2} \right)$

35. $\sin \left(\frac{-2\pi}{3} \right)$

36. $\cos \frac{10\pi}{3}$

37. $\tan 135^\circ$

38. $\csc 300^\circ$

39. $\sec (-240^\circ)$

40. $\cot 510^\circ$

Find the acute angle α (in degrees) that satisfies each equation. Do not use a calculator.

41. $\sin \alpha = \left(\frac{\sqrt{2}}{2}\right)$

42. $\cos \alpha = 1$

43. $\tan \alpha = 0$

44. $\csc \alpha = \frac{2\sqrt{3}}{3}$

45. $\sec \alpha = \frac{2\sqrt{3}}{3}$

46. $\tan \alpha = \textit{undefined}$

47. $\cot \alpha = 1$

Evaluate each expression without using a calculator.

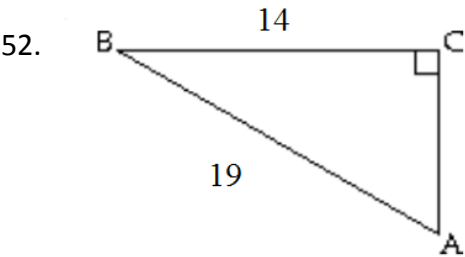
48. $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

49. $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$

50. $\tan^{-1}(1)$

51. $\sec^{-1}(\textit{und})$

Find the exact value of all six trigonometric functions for the angle A in the given triangle.



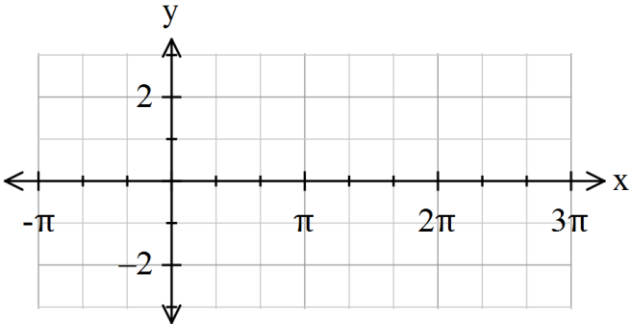
Determine the amplitude, phase shift, period, frequency, and range for each function. Make a table with the five key points and sketch at least one cycle of the graph with the five key points from the table.

53. $f(x) = 3\cos\left(x - \frac{\pi}{6}\right)$

Amplitude:

Phase shift:

x	f(x)



Period:

Frequency:

Range:

54. $f(x) = -\sin(2x) + 1$

Amplitude:

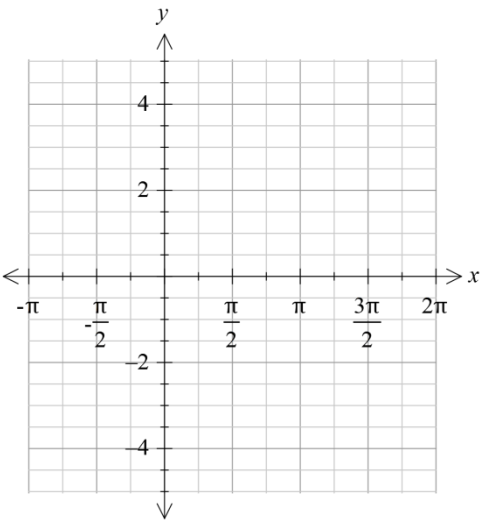
Phase shift:

x	f(x)

Period:

Frequency:

Range:



Sketch at least one cycle of the graph of each function. Determine the period, asymptotes, and the range of each function. Make a table with the five key points.

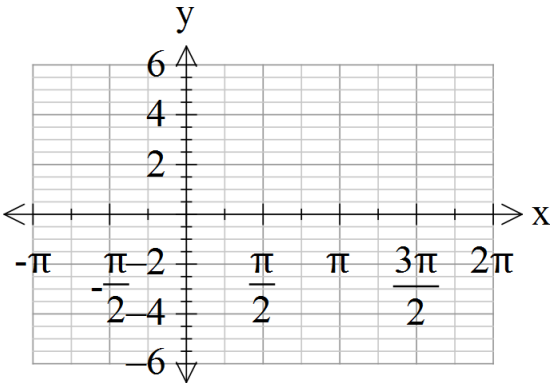
55. $f(x) = \sec\left(x + \frac{\pi}{4}\right) + 2$

Period:

Asymptotes:

x	f(x)

Range:

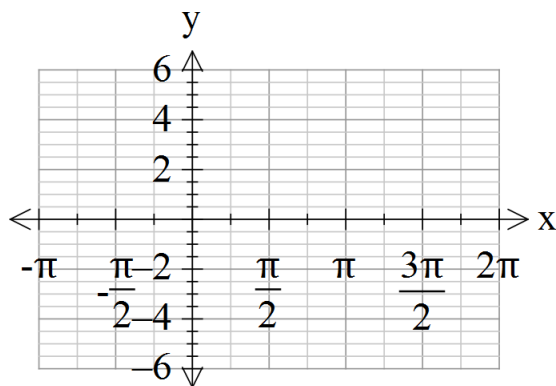


Sketch at least one cycle of the graph. Determine the period and the equation of the vertical asymptotes. Make a table with the five key points.

x	f(x)

56. $f(x) = \frac{1}{3} \tan(x - \frac{\pi}{2})$ Period:

Asymptotes:



Write the equations for 57 & 58 in its final form using the given translations in the given order.

57. The graph of $y = \cot(x)$ is shifted $\frac{\pi}{4}$ units left, stretched by a factor of 3, then translated 2 units upward.

58. The graph of $y = \csc(x)$ is reflected across the x-axis, shifted right $\frac{\pi}{6}$, then downward one unit.

59. The point $\left(\frac{\pi}{2}, -1\right)$ is on a graph. What is the new location of the point if it is translated $\frac{\pi}{3}$ to the left, shifted up 4, then reflected across the y-axis?

60. What is the period of the given function?

$f(x) = 3 \cot\left(\frac{x}{6}\right) - 2$ Period: